COMPATIBILITY DETERMINATION

Use: Rocket & Payload Impact and Recovery

Refuge Name: Arctic National Wildlife Refuge, Fairbanks, Alaska

Establishing and Acquisition Authority

December 6, 1960 (Arctic National Wildlife Range). Name changed to Arctic National Wildlife Refuge and expanded on December 2, 1980. Establishing and Acquisition Authorities: The Arctic National Wildlife Range was established by Public Land Order 2214, December 6, 1960. Arctic National Wildlife Refuge (Arctic Refuge), incorporating the Wildlife Range, was established by Public Law 96-487; the Alaska National Interest Lands Conservation Act (ANILCA), December 2, 1980. Public Law 100-395 (1988) added 325,000 acres to Arctic Refuge.

Refuge Purpose(s)

In 1960 Public Land Order 2214 established the Arctic National Wildlife Range "For the purpose of preserving unique wildlife, wilderness and recreational values. . ." These purposes, to the extent they are consistent with the purposes established by ANILCA, apply to that portion of the refuge that was originally the Arctic National Wildlife Range (about 8.9 million acres, 8 million acres of which was designated wilderness by ANILCA).

In 1980, additional purposes for which Arctic Refuge, in its entirety, were established for management. As set forth in Section 303(2)(B) of ANILCA, they are:

(i) to conserve fish and wildlife populations and habitats in their natural diversity including, but not limited to, the Porcupine caribou herd (including participation in coordinated ecological studies and management of this herd and the Western Arctic caribou herd), polar bears, grizzly bears, muskox, Dall sheep, wolves, wolverines, snow geese, peregrine falcons and other migratory birds, and Arctic char and grayling;

(ii) to fulfill the international treaty obligations of the United States with respect to fish and wildlife and their habitats;

(iii) to provide, in a manner consistent with purposes set forth in subparagraphs (i) and (ii), the opportunity for continued subsistence uses by local residents; and

(iv) to ensure, to the maximum extent practicable and in a manner consistent with the purposes set forth in subparagraph (i), water quality and necessary water quantity within the refuge.

[Supplemental Purposes of the Ivishak, upper Sheenjek, and Wind rivers as Wild River] Section 602 of the ANILCA designated the upper Sheenjek, and Wind rivers as Wild Rivers.

> Accordingly the Arctic NWR CCP, Section 605 of Pub. L. 96-487, the Wild and Scenic Rivers Act (16 U.S.C. 1274(a)) require that those rivers will be managed under objectives that will "protect and maintain the physical and biological qualities of the drainage and adjacent refuge lands, including water quality and quantity.

The provisions of the Wilderness Act of 1964 apply to the 8 million acres designated as Wilderness by ANILCA with applicable exceptions provided by ANILCA. Accordingly the wilderness area is managed to preserve the intent of the Wilderness Act. Intent of the Wilderness Act is described in the definitions, include:

> "A wilderness . . . is hereby recognized as an area where the earth and its community of life are untrammeled by man where man himself is a visitor who does not remain…protected and managed so as to preserve its natural conditions and which (1) generally appear to have been affected primarily by the forces of nature, with the imprint of mans work substantially unnoticeable; (2) has outstanding opportunities for solitude or a primitive and unconfined type of recreation; (3) has at least five thousand acres of land or is of sufficient size as to make practicable its preservations and use in an unimpaired condition; and (4) may also contain ecological, geological, or other features of scientific educational, scenic, or historical value. "

Wilderness Act section 4(b) includes further mandates to preservation of the wilderness character:

"… each agency administering wilderness shall be responsible for preserving wilderness character of the area and shall so administer such area for such other purposes for which it may have been established as also to preserve its wilderness character. Except as otherwise provided in this Act, wilderness areas shall be devoted to the public purposes of recreational, scenic, scientific, educational, conservation, and historic values."

National Wildlife Refuge System Mission

The mission of the National Wildlife Refuge System is "to administer a national network of lands and waters for the conservation, management, and, where appropriate, restoration of the fish, wildlife, and plant resources and their habitats within the United States for the benefit of present and future generations of Americans" (National Wildlife Refuge System Administration Act of 1966, as amended [16 U.S.C. 668dd-668ee]).

Description of Use(s)

This compatibility determination re-evaluates the use of federal lands within Arctic NWR as a program component of Poker Flat Research Range that supports research programs from across the country in the study of northern atmospheric phenomenon and climate change. In 1994, the refuge found these activities compatible with refuge purposes. The refuge provides an impact zone for research rockets and payloads. This research requires associated landings of helicopters to retrieve scientific payloads and rocket debris. The University of Alaska Fairbanks – Geophysical Institute's Poker Flat Research Range has been conducting auroral and middle to upper atmospheric research in Alaska for over ten years, including use of lands within the refuge and annual efforts to remove debris.

From four to ten sounding rockets are launched from the Poker Flat Research Range each year. The range is located approximately 150 miles south of the refuge, and about thirty miles north of Fairbanks, Alaska. The sounding rockets are single, two, three, or four-stage solid fuel rockets. The rockets carry instrumented payloads into the earth's upper atmosphere to make direct measurements of the aurora borealis, ozone, solar protons, electric and magnetic fields, ultraviolet and other atmospheric phenomena unique to high latitudes.

The first stage of the rocket propels it to about 20,000 feet, separates from the remaining stages and payload, and falls back to earth about two miles from the launch site at Poker Flat. The second stage and payload follow the flight trajectory to typical altitudes of 50 to 300 miles and land 50 to 225 miles from the launch site. On the occasion when a three-stage rocket is utilized, both the rocket and payload over fly Alaska and land in international waters to the north. Most landing in the Arctic NWR occur in Flight Zones 2,3, and 4 (See attached map). Only one known landing has been documented in the designated wilderness.

It is the second stages and payloads that occasionally impact on the Arctic NWR. Managers planning rocket operations intentionally avoid impacts and landings in designated wilderness of Arctic NWR. The refuge is but one of several federal, state and private land managers that authorize the use of a combined twenty-five million acres of land for rocket and payload impact and recovery. The dimensions of the empty rocket and payload are approximately fifteen to twenty feet long, thirty inches in diameter and weigh a few hundred pounds. Most payloads launched on sounding rockets from Poker Flat are recovery payloads that contain locator beacons and descend slowly to earth by an orange and white parachute. They are tracked via radar, and recovered with a helicopter. When they are recovered, any disturbance to the landscape is repaired as much as feasible. All rockets launched from Poker Flat are unguided after launch. The Poker Flat managers use a risk assessment prepared by the National Aeronautics and Space Administration that takes into account wind speed, direction of flight and type of rocket to determine launch elevation and flight azimuth, and impact point to reduce risk to life and property to an absolute minimum. For a given year operations managers provide a detailed list of potential launch vehicle, launch windows, and potential impact zones for each launch (see attached map).

Any deviation from this description will require a separate compatibility determination.

Availability of Resources

Adequate refuge personnel and base operational funds are available to manage research activities at existing (approximately two requests to retrieve components are made annually) and projected levels. Administrative staff time (not more than five days) primarily involves phone conversations, written correspondence, proposal review, permit issuance and personal interaction with researchers. Field work associated with administering the program primarily involves monitoring researchers' compliance with the terms of the permit.

Anticipated Impacts of the Use(s)

Factors such as impact area(s), number of rockets or payloads, number of aircraft and anticipated amount of aircraft use will determine the extent of impacts on the refuge. Past impacts from this use have resulted in minor damage to vegetation, which is repaired as much as practical, and a few hours of helicopter flight time and landings to retrieve rocket payloads and debris, and perform site remediation.

At current levels, rocket and payload impact and recovery and associated activities should not have significant impacts on the wildlife resources, other refuge resources (e.g., water quality, soil, and vegetation), and other refuge users, especially subsistence users, due to the limited scope and complete administrative oversight of this research. Winter conditions (frozen soil) limit impact and landing damage.

Public Review and Comment

Public involvement for this document includes a public notice in the Fairbanks Daily News Miner newspaper and a thirty-day public comment period. This draft compatibility determination is available for review on the US Fish and Wildlife Service – Alaska Region's compatibility determination Web site, http://alaska.fws.gov/nwr/planning/index.htm

Determination

_____Use is Not Compatible

__X__ Use is Compatible

Stipulations Necessary to Ensure Compatibility

Refuge staff will monitor all research being conducted on the refuge. Findings from these monitoring efforts will be used to determine what additional management actions, if any, are needed to ensure that research activities remain compatible with refuge purposes. Monitoring of all authorized research activities will be continued to ensure compliance with specific terms and conditions tailored for each research permit as well as with the following general conditions that are incorporated into all research permits to minimize impacts on refuge lands and resources.

- Failure to abide by any part of this special use permit; violation of any refuge related provision in Titles 43 (Part 36) or 50 Code of Federal Regulations (sub-chapters B and C); or violation of any pertinent state regulation (e.g., fish or game) will, with due process, be considered grounds for immediate revocation of this permit and could result in denial of future permit requests for lands administered by the U.S. Fish and Wildlife Service. This provision applies to all persons working under the authority of this permit. Appeals of decisions relative to permits are handled in accordance with 50 Code of Federal Regulations 36.41.

- The permittee is responsible for ensuring that all employees, party members, aircraft pilots and other persons working for the permittee and conducting activities allowed by this permit are familiar with and adhere to the conditions of this permit.

- Any problems with wildlife and/or animals taken in defense of life or property must be reported immediately to the refuge manager and Alaska Department of Fish and Game, and be salvaged in accordance with state regulations.

- This permit does not grant the permittee and his/her clients exclusive use of the site(s) or lands covered by the permit.

- This permit may be canceled or revised at any time by the refuge manager due to high fire danger, flooding, unusual resource problems, or other significant problems or emergencies.

- The permittee or his/her designee shall notify the refuge manager during refuge working hours in person or by telephone before beginning and upon completing activities allowed by this permit.

- Prior to beginning activities allowed by this permit, the permittee shall provide the refuge manager with: (1) the name and method of contact for the field party chief/supervisor; (2) the aircraft and other vehicle types to be used, including identification information; (3) names of assistants and helpers; and (4) any changes to information provided in the original permit application.

- In accordance with the Archaeological Resources Protection Act (16 U.S.C. 470aa), the removal, excavation, disturbance, collection, or purchase of historical, recent, ethnological, or archaeological specimens or artifacts is prohibited.

- The permittee will not make launches with a planned impact site within the Mollie Beattie Wilderness area. The use of helicopters outside the wilderness area is authorized provided that:

    (a) Landing is prohibited except for the direct support of the activity covered by this permit and emergencies. No recreational use of helicopters is permitted.

(b) Clearing of vegetation for landing/takeoff is prohibited. Incidental hand removal of rocks and other minor obstructions may be permitted.

(c) Activities are restricted to day use only. No overnight stays are anticipated.

(d) Personnel transported are restricted to only those necessary to conduct the debris recovery. Recreational use is not permitted.

(e) Low level slinging of gear from site to site is prohibited.

- The use of off-road vehicles (except snow machines) is prohibited.

- The operation of aircraft at altitudes and in flight paths resulting in the herding, harassment, hazing, or driving of wildlife is prohibited. It is requested that all aircraft maintain a minimum altitude of 2000 feet above ground level, except during take-off, landing, and when safety considerations require a lower altitude.

- Fuel caches are allowed only in designated areas, must be identified on a US Geological Survey map (or map photocopy), and submitted in writing for approval by the refuge manager before they are established. Storage will meet standards of USFWS, Alaska Region, Fuel Storage Policy.

- Any action by a permittee or the permittee's employees that unduly interferes with or harasses refuge visitors or impedes access to any site is strictly prohibited. Examples of prohibited acts include, but are not limited to: 1) parking aircraft or placing other objects (rocks, tents, etc.) on any area so as to restrict use by other aircraft; 2) otherwise intentionally interfering in the activity of other refuge users; and 3) engaging in activity that is contrary to state and federal laws.

- The permit is for refuge lands only. This permit does not authorize use of private lands such as land owned by ANCSA Native corporations, individuals, or the State of Alaska.

- The permittee will take no action that interferes with subsistence activities of rural users or restricts the reasonable access of subsistence users to refuge lands. This may include, but is not limited to, disturbance of wildlife and their movements near subsistence hunters, and damage to cabins, trails, traditional campsites or caches used by subsistence users.

- All rocket launches will be well publicized in advance to forewarn travelers and residents of the area involved. A minimum of two weeks notice of rocket launch dates and impact zones will be provided in writing to the refuge manager.

- The permittee will insure that a transponder or other radio location aid is incorporated with each payload to facilitate tracking and recovery after launch.

- The permittee will maintain a viable rocket component recovery program to track, locate, and remove rocket debris annually. The refuge manager will be informed of locations (latitude and longitude) of impact sites, un-recovered rockets and/or payloads, and any potential hazards that may thereby be created.

- The Fish and Wildlife Service will not be liable for any act or omission of the permittee (or its employees, hereinafter referred to jointly as "permittee") in operation of permittee's rockets during all phases of operation from launch through recovery. The permittee agrees to hold harmless the Fish and Wildlife Service against any and all claims for loss or liability by any party arising out of launch, impact, and recovery of permittee's rockets, however caused.

- The permittee will be responsible for reporting any fires arising from these activities and will immediately notify the Alaska Fire Service and the Fish and Wildlife Service.

- Rocket or debris impacts within the refuge are prohibited from 1 May through 30 September to avoid periods of high public use. However, exceptions to this prohibition may be authorized for specific time periods and areas. Requests for impact use during this period must be received by the refuge manager forty-five days before intended use. (A launch schedule is not considered a request.) Exception requests must include a complete project description, a statement affirming that the proposed dates are essential, the alternatives considered an analysis of the increased risk incurred and a justification for this risk.

- Recovery of rockets that enter the wilderness area inadvertently may be authorized on a case by case basis. If debris is located in the wilderness area a permittee must inform the manager who will consider the appropriate action under provisions of the Wilderness Act of 1964. Changes in the launch program that elevate the probability of impact into the wilderness area may require a new compatibility determination before a permit request can be considered.

- Activities may not occur in some special use areas and/or during some time periods (e.g., caribou calving, snow goose staging, Sadlerochit Springs). Prior to specific recovery operations the permittee shall consult with the Refuge Manager to gain approval. Special area boundaries or the effective dates may be modified by the refuge manager as needed. Specific authorization to use localities within special areas may sometimes be obtained on a case-by-case basis, depending on the location of animal concentrations, access route, proposed activity, etc.

- Raptor species typically build nests along cliff and bluff faces, which are extensive throughout the Arctic Refuge. Active nest sites may be in your intended work area. Helicopter activity is prohibited within one-half mile of these active

raptor nest sites north of the continental divide during the period May 1 through August 31 and south of the continental divide from May 1 through August 15.

- The preeminent value of the Arctic Refuge lies in its unsurpassed wilderness condition. The permittee shall ensure that all employees and clients seek to minimize the effect of their activities on the wilderness character of the land, wildlife, and the unique experience available here.

Justification

The Service may permit the use of a refuge for investigatory scientific purposes when such use is compatible with the objectives for which the refuge is managed. Priority will be given to studies that contribute to the enhancement, protection, use, preservation and management of current, indigenous wildlife populations and their habitats in their natural diversity. All proposed research conducted by other agencies or entities will be thoroughly evaluated prior to authorization and then monitored closely to ensure the activities do not materially interfere with or detract from the purposes of the refuge or the mission of the National Wildlife Refuge System.

Scientific investigations of wildlife, resources, and visitor experiences will support the refuge's ability to provide for wildlife-dependent priority public uses and to meet other refuge purposes. These investigations must be conducted safely.

Given the recent international Arctic Climate Impact Assessment (2004) report, research into global warming has become of paramount importance to understanding and protecting Arctic ecosystems like Arctic National Wildlife Refuge. It is the policy of the Service (4 RM 6.1) to encourage and support research and management studies in order to provide scientific data upon which to base decisions regarding management of units of the refuge system.

Public notice of the draft compatibility determination was published by the Fairbanks Daily News-Miner on Friday December 10, 2004. The draft compatibility determination was posted on the publicly accessible bulletin board at Refuge Headquarters, and it was available at the U.S. Fish and Wildlife Service Region 7 website for viewing and downloading during the thirty day comment period. No public comments were received. The Service concludes this is further evidence that the decision that the use described is compatible with refuge purposes and is sufficient as written.

Mandatory 10-Year Re-Evaluation Date (provide month and year for allowed uses only): January 2014

Mandatory 15-Year Re-Evaluation Date (for priority public uses):

NEPA Compliance for Refuge Use Decision

_____ Categorical Exclusion without Environmental Action Memorandum
_____ Categorical Exclusions and Environmental Action Memorandum
_____ Environmental Assessment and Finding of No Significant Impact
__X__ Environmental Impact Statement and Record of Decision

Supporting Documents

- Environmental Analysis for Poker Flat Research Range, Geophysical Institute, University of Alaska Fairbanks, November 1991.
- Arctic National Wildlife Refuge, Final Comprehensive Conservation plan, Environmental Impact Statement, Wilderness Review, Wild River Plan. Record of Decision Signed November 10, 1988.
- Compatibility Determination, Public Leases and Uses (Other): Atmospheric Rocket Research. Found compatible; signed 10 August 1994.
- ACIA, Arctic Climate Impact Assessments. 2004. Impact of a Warm Arctic. Cambridge University Press. Cambridge. UK.

Refuge Determination

Prepared by: Tevis Underwood (Signature) 1/10/05 (Date)

Refuge Manager / Project Leader Approval: Gary D. Schube (Signature) 1/10/05 (Date)

Concurrence

Refuge Supervisor: Mike Boyle (Acting) (Signature) 1/13/05 (Date)

Regional Chief, National Wildlife Refuge System: Richard Hotvig (Signature) 1/13/05 (Date)